

WHAT IS CLAIMED IS:

1. A data processing apparatus for transferring  
a document formed by a plurality of logical pages to  
a printing device, and allowing the printing device  
5 to perform a printing process in set units,  
comprising:

spooling means for spooling the document;

designation means for designating a printing  
mode for output of a plurality of logical pages to  
10 one storage medium;

collate determination means for determining  
whether or not the document is a collate document to  
be printed in plural set units by comparing drawing  
information among the logical pages of the document  
15 spooled in said spooling means when said designation  
means designates the printing mode;

detection means for comparing drawing  
information among logical pages in the spooled  
document when said collate determination means  
20 determines that the document is a collate document,  
and detecting the number of pages as a segment of a  
set unit; and

control means for controlling a set-unit  
transfer process on drawing information for the  
25 printing device depending on the segment of a set  
unit detected by said detection means.

2. The data processing apparatus according to claim 1, wherein

a printing mode which can be specified by said designation means includes a double-sided printing mode for printing drawing information on both sides of a storage medium, and a N-up printing mode for outputting a plurality of logical pages on the storage medium.

10 3. The data processing apparatus according to claim 1, wherein

when said collate document determination means determines whether or not the current document is a collate-formatted document, the size of data on each page stored by said spooling means is compared, and it is determined whether or not contents are different.

20 4. The data processing apparatus according to claim 1, wherein

when said collate document determination means determines whether or not the current document is a collate-formatted document, a spool code of each page is sampled and compared, thereby determining a page containing different contents.

5. The data processing apparatus according to

claim 1, wherein

when said collate document determination means determines whether or not the current document is a collate-formatted document, all data in a spool code  
5 of each page is compared as a method of determining pages completely matching in contents, thereby determining matching pages in contents.

6. The data processing apparatus according to  
10 claim 1, wherein

when a printing device can perform collate-printing, there is no means for spooling a print command, and it is necessary to transmit a collate set number designation print command at the beginning  
15 of a job, all pages in the job are temporarily spooled and then said collate document determination means makes a determination, when said print command generation means generates a collate set number designation print command and a part of leading print  
20 commands, said collate document determination means obtains a factor (including 1) of a total number of pages forming a document, segments a document for each factor, and determines drawing contents whether or not a collate-format page configuration is  
25 established.

7. The data processing apparatus according to

claim 1, wherein

a printing device includes spooling means of a print command, when it is not necessary to transmit a collate set number designation print command to the beginning of the job, said spooling means stores drawing information for each means, said collate document determination means determines immediately after storing a page other than the first page whether or not it contains the same contents as the first page, a print command of the page is generated and transferred to the printing device until the page including the same drawing contents as the first page can be detected, when a page including the same drawing contents as the first page is detected, said collate document determination means determines whether or not the current document is a collate document all through the job in and after the page, if it is a collate document, a collate set number designation print command is generated, and collate-printing is performed on a printing device.

8. The data processing apparatus according to claim 1, wherein

when a printing device does not perform collate-printing, a collate document is divided as a plurality of print commands in set units and transferred to a printing device.

9. The data processing apparatus according to claim 8, wherein

a blank page is added such that a function can be divided in set units with a function of printing a plurality of logical pages on one output medium taken  
5 into account so that a print command can be divided in set units.

10. The data processing apparatus according to  
10 claim 9, wherein

when a printing device has a blank paper saving function, a print command to disable a blank paper saving function is issued.

15 11. The data processing apparatus according to claim 8, wherein

a set-unit print command can be divided by issuing a command to specify a page number of a logical page arranged on one output medium.

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12. The data processing apparatus according to claim 8, wherein

a set-unit print command can be divided by dividing a job in set units.

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13. The data processing apparatus according to claim 1, wherein

when a function of printing a plurality of logical pages on one output medium is applied at an information processing device side, a function of printing a plurality of logical pages on one output medium with a segment of a set unit in a collate document taken into account.

14. The data processing apparatus according to claim 1, further comprising:
- 10        print command generation means for generating a print command for printing one set when said collate determination means determines that the document is a collate document; and
- bin configuration determination means (for
- 15    example, a spool file manager 304 shown in FIG. 4) for determining whether or not the printing device has a plurality of output bins, wherein
- said print command generation means generates an output bin designation print command for
- 20    specifying output of a different output bin for each set when said bin configuration determination means determines a plurality of output bins.

15. The data processing apparatus according to
- 25    claim 1, wherein
- said collate determination means obtains the factors of the number of pages forming a job,

segments the job for each factor, and determines according to drawing information whether or not a page configuration is in a collate format.

5           16. The data processing apparatus according to claim 14, wherein

              said print command generation means temporarily stores all pages of a job when the printing device has no function of spooling a print command, and then  
10           generates a collate set number designation print command.

              17. The data processing apparatus according to claim 14, further comprising

15           collate function applicability determination means (for example, a spool file manager 304 shown in FIG. 4) for determining whether or not the printing device can perform a collate-printing function or whether or not there is a collate-printing function,  
20           wherein

              when it is determined that the collate-printing is not applicable, or when the collate-printing function is not available, the spooling process is not performed, and a generated print command is  
25           transferred to a printing device.

              18. The data processing apparatus according to

claim 17, further comprising:

position determination means (for example, a  
spool file manager 304 shown in FIG. 4) for  
determining the possible issue position in a job to  
5 which a collate set number designation print command  
can be issued when said collate function  
applicability determination means determines that the  
printing device can perform a collate-printing  
function.

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19. A job processing method for use with a data  
processing apparatus which transfers to a printing  
device a document formed by plurality of logical  
pages to allow the printing device to perform a  
15 printing process in set units, including:

a spooling step of spooling the document;

a designating step of designating a printing  
mode for output of a plurality of logical pages to  
one storage medium;

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a collate determining step of determining  
whether or not the document is a collate document to  
be printed in plural set units by comparing drawing  
information among the logical pages of the document  
spooled in said spooling means when said designation  
25 means designates the printing mode;

a detecting step of comparing drawing  
information among logical pages in the spooled



document when said collate determination means determines that the document is a collate document, and detecting the number of pages as a segment of a set unit; and

5           a controlling step of controlling a set-unit transfer process on drawing information for the printing device depending on the segment of a set unit detected by said detection means.

10           20. A data processing program executed by a data processing apparatus which transfers to a printing device a document formed by plurality of logical pages to allow the printing device to perform a printing process in set units, including:

15           a spooling step of spooling the document;  
            a designating step of designating a printing mode for output of a plurality of logical pages to one storage medium;

            a collate determining step of determining  
20 whether or not the document is a collate document to be printed in plural set units by comparing drawing information among the logical pages of the document spooled in said spooling means when said designation means designates the printing mode;

25           a detecting step of comparing drawing information among logical pages in the spooled document when said collate determination means

determines that the document is a collate document,  
and detecting the number of pages as a segment of a  
set unit; and

a controlling step of controlling a set-unit  
5 transfer process on drawing information for the  
printing device depending on the segment of a set  
unit detected by said detection means.